

# INSPECTION CERTIFICATE

**Certificate No.:** 211449988-2019/01

**Name and address of bearer/  
manufacturer:**

Darhan Yapı ve Endüstri San. Tic. A.Ş.  
Aydınevler mah. Kaptan Rifat sok.No:5  
Maltepe/İstanbul

We hereby certify that according to the results of the inspection, the product mentioned below fulfills the contractual requirements governing mission entrusted to TUV Teknik.

Product is marked with  
nameplate



hard stamp  Yes  No: TUV Teknik hard stamp on the

Inspected according to

**ANSI-ASHRAE Standard 171-2017**

Description of product:

**Seismic Restraints**

Model & Type:

**See Annex I**

Inspection Report No:

**RP-211449988-01**

Inspection date or period:

**11-12.07.2019**

Place of manufacture:

**Aydınevler mah. Kaptan Rifat sok.No:5  
Maltepe/İstanbul**

Place of test:

**İTÜ ROTAM /MASLAK/İSTANBUL/TURKEY**

Inspected by:

**Cihan Ulusoy**

**İstanbul , Issue Date: 29.08.2019**



Certifier for Product of TÜV Teknik  
Kontrol ve Belgelendirme A.Ş.

**Mr. A. Leyent Arslan**

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TR-34349 Beşiktaş, İstanbul  
Türkiye

# ANNEX I

Certificate No.: 211449988-2019/01

Type of Connection Sleeve	Tensile Test Results	Safe Loads (1.5:1 Safety Factor)	Type of Failure
VIBRATECH 1 SEISMIC VIBRATION ISOLATOR	18 kN	12 kN	a*
VIBRATECH 2 SEISMIC VIBRATION ISOLATOR	36 kN	24 kN	a*
VIBRATECH 4 SEISMIC VIBRATION ISOLATOR	72 kN	48 kN	a*
VIBRATECH 6 SEISMIC VIBRATION ISOLATOR	83 kN	62 kN	a*
Z 2400 SEISMIC SNUBBER	36 kN	24 kN	a*
L 2400 SEISMIC SNUBBER	36 kN	24 kN	a*

\*a All the tests were ended voluntarily before failure occurred.

Istanbul , Issue Date: 29.08.2019



Certifier for Product of TÜV Teknik Kontrol ve Belgelendirme A.Ş.

  
Mr. A. Levent Arslan

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Türkiye

## TÜV NORD TURKEY Industrial Services Inspection Report

INSPECTOR	Cihan Ulusoy	TÜV ORDER NO.	211449988
PLACE & DATE	İTÜ Kompozit ve Yapı Lab. -11-12.07.2019	REPORT NO	RP-211449988-01
CUSTOMER	Darhan	MANUFACTURER	N/A
CUSTOMER ORDER NO	-	MANUFACTURER ORDER NO	-
INSPECTION DATES	11-12.07.2019	MANUFACTURER CONTACT	-
CUSTOMER CONTACTS	Ahmet Çağlar	HARD STAMP	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
REPORT TYPE	<input checked="" type="checkbox"/> Initial <input type="checkbox"/> Interm <input type="checkbox"/> Final		
ANNEXES	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

### • SUBJECT OF INSPECTION

Seismic restraints (seismic vibration isolator, seismic snubbers) were subjected to tensile and compressive test (for seismic snubbers, only compression) under dynamic loads by following the test procedure in ANSI/ASHRAE Standart 171-2017 to rate the capacity of seismic and wind restraints of seismic restraint system to evaluate the minimizing ability about the differential movement between a component and the supporting building structure during an earthquake or a high-wind event by determining the maximum loads the bidirectional Figure 2 (for seismic snubbers, single directional Figure 1) single axis restraint can withstand without breakage or excessive deformation.

\* ANSI/ASHRAE Standart 171-2017 was accepted as guide during inspection.

### • PROJECT PROGRESS

Four sample of each product were subjected to test in accordance with Figure A-3 (for seismic snubbers, three sample acc. to Figure A-2) by using fixtures to arrange the positions. Anticipated maximum capacity loads (Target load, See Table 1). were declared by Darhan. Conformity of loading cycles and frequencies were controlled and approved for each model acc. to ANSI/ASHRAE Standart 171-2017. Load application frequency was seen as 0.1 Hz as indicated in the standart. Loadings were done in periodic and continuous cycles. It was seen that Darhan followed the loading steps below as indicated in the standart.

Loading steps:

1. Starting position load : %5 of the anticipated maximum capacity load
1. Initial loading sequence : 25 complete cycles between % 50 of the anticipated maximum capacity load and starting position load
2. Inreasing load sequence : Loading continued by increasing % 3.5 per cycle and continued to make cycles between starting position load.
3. End of loading sequence: Test were stopped when one of the following occurred:

- Sample breaks or fractures,
- Measure axial displacement exceeds the deformation limit as defined in Section 7.3
- The test load exceeds 2 times the manufacturer’s anticipated maximum capacity load.
- Premature failure due to error in test setup, fixtures or equipment.

\* Darhan choosed to end the tests voluntarily when target loads were achieved without failure, before any of the aboves occurred.

• **MAIN CONCLUSIONS & RESULT & REMARKS**

It was seen that “Darhan” followed the test procedure and obtained test results as indicated in ANSI/ASHRAE Standart 171-2017. Test results of products can be seen below.

Name of the product	Test Positions		Recommended Load	Safety Coefficient	Target Load	Result	Photo
VIBRATECH 1 SEISMIC VIBRATION ISOLATOR	Figure A3.1	Vertical Tension and Compression	(+/-) 12,00kN	1,50	(+/-) 18,00kN	OK	#1
	Figure A3.2	45 Longitudinal Vertical Load	(+/-) 12,00kN		(+/-) 18,00kN	OK	#2
	Figure A3.3	Horizontal Longitudinal	(+/-) 12,00kN		(+/-) 18,00kN	OK	#3
	Figure A3.4	45 Lateral Vertical Load	(+/-) 12,00kN		(+/-) 18,00kN	OK	#4
	Figure A3.5	Horizontal Transverse	(+/-) 12,00kN		(+/-) 18,00kN	OK	#5
VIBRATECH 2 SEISMIC VIBRATION ISOLATOR	Figure A3.1	Vertical Tension and Compression	(+/-) 24,00kN	1,50	(+/-) 36,00kN	OK	#6
	Figure A3.2	45 Longitudinal Vertical Load	(+/-) 24,00kN		(+/-) 36,00kN	OK	#7
	Figure A3.3	Horizontal Longitudinal	(+/-) 24,00kN		(+/-) 36,00kN	OK	#8
	Figure A3.4	45 Lateral Vertical Load	(+/-) 24,00kN		(+/-) 36,00kN	OK	#9
	Figure A3.5	Horizontal Transverse	(+/-) 24,00kN		(+/-) 36,00kN	OK	#10
VIBRATECH 4 SEISMIC VIBRATION ISOLATOR	Figure A3.1	Vertical Tension and Compression	(+/-) 48,00kN	1,50	(+/-) 72,00kN	OK	#11
	Figure A3.2	45 Longitudinal Vertical Load	(+/-) 48,00kN		(+/-) 72,00kN	OK	#12
	Figure A3.3	Horizontal Longitudinal	(+/-) 48,00kN		(+/-) 72,00kN	OK	#13
	Figure A3.4	45 Lateral Vertical Load	(+/-) 48,00kN		(+/-) 72,00kN	OK	#14
	Figure A3.5	Horizontal Transverse	(+/-) 48,00kN		(+/-) 72,00kN	OK	#15
VIBRATECH 6 SEISMIC VIBRATION ISOLATOR	Figure A3.1	Vertical Tension and Compression	(+/-) 62,00kN	1,35	(+/-) 83,00kN	OK	#16
	Figure A3.2	45 Longitudinal Vertical Load	(+/-) 62,00kN		(+/-) 83,00kN	OK	#17
	Figure A3.3	Horizontal Longitudinal	(+/-) 62,00kN		(+/-) 83,00kN	OK	#18
	Figure A3.4	45 Lateral Vertical Load	(+/-) 62,00kN		(+/-) 83,00kN	OK	#19
	Figure A3.5	Horizontal Transverse	(+/-) 62,00kN		(+/-) 83,00kN	OK	#20

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**TÜV Teknik Kontrol ve Belgelendirme A.Ş**

Z 2400 SEISMIC SNUBBER	Figure 14C	Combined Load	(-) 24,00kN	1,50	(-) 36,00kN	OK	#21
	Figure 14B	Vertical Load	(+) 24,00kN		(+) 36,00kN	OK	#22
	Figure 14A	Horizontal Load	(-) 24,00kN		(-) 36,00kN	OK	#23
L 2400 SEISMIC SNUBBER	Figure 14C	Combined Load	(-) 24,00kN	1,50	(-) 36,00kN	OK	#24
	Figure 14A	Horizontal Load	(+) 24,00kN		(+) 36,00kN	OK	#26
	Figure 16B	Vertical Load	(-) 24,00kN		(-) 36,00kN	OK	#27


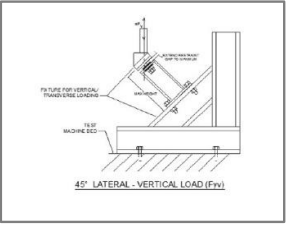
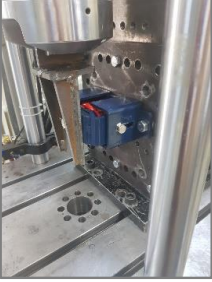
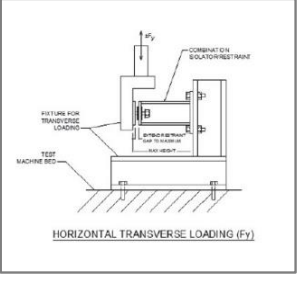

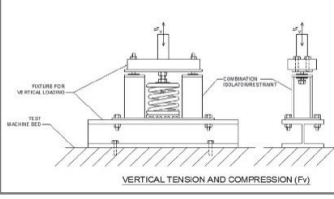

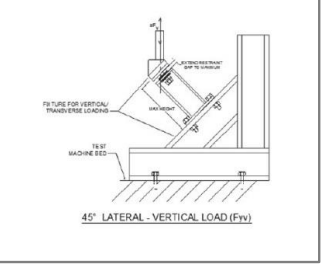

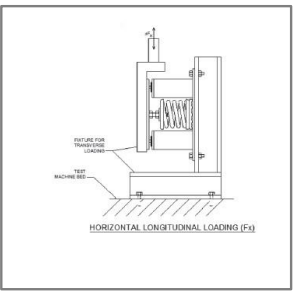
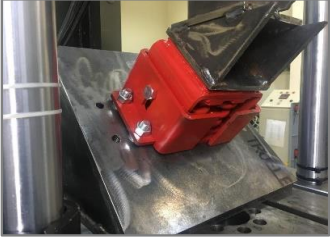
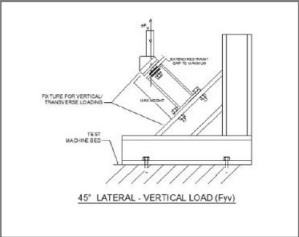

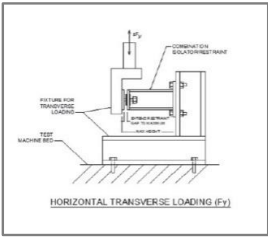

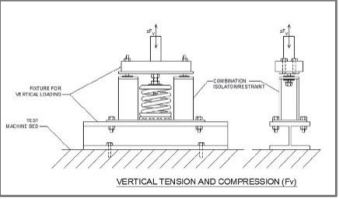
Note: The "+" and "-" expressions specified in the load values expresses;  
 - : Tensile Test  
 + : Compression Test

**Table 1. Test Results**


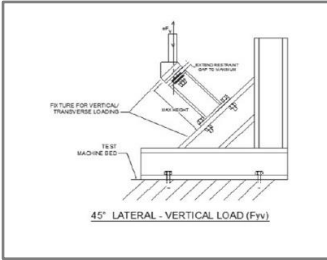

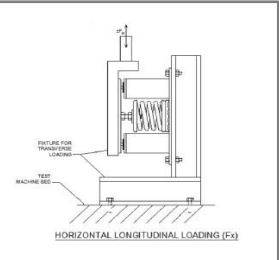

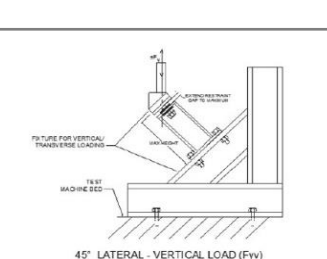

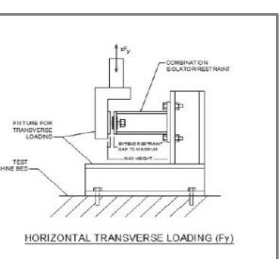

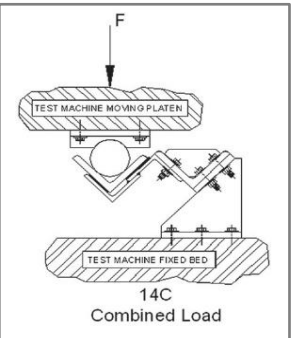

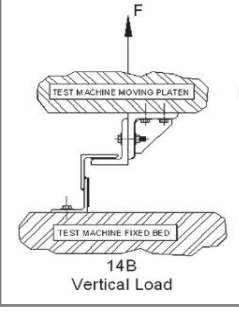

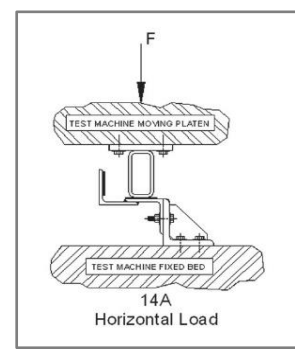
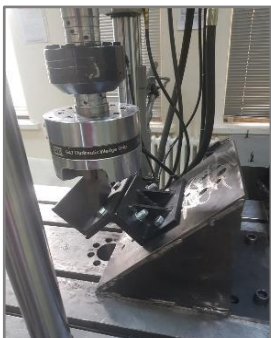
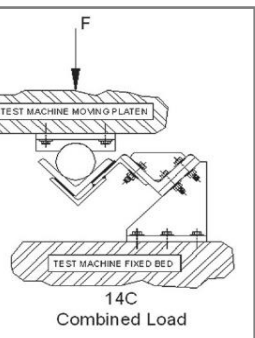
	
<b>Inspected by</b> <b>Name: Cihan Ulusoy</b> <b>Signature:</b> 	<b>Reviewed by:</b> <b>Name: A. Levent Arslan</b> <b>Signature:</b> 
<b>Sent to:</b> <input type="checkbox"/> CLIENT <input type="checkbox"/> MANUFACTURER <input type="checkbox"/> ARCHIVE	

PHOTOS FROM INSPECTION


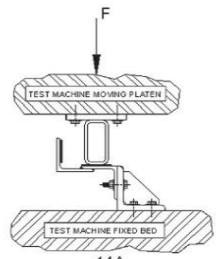

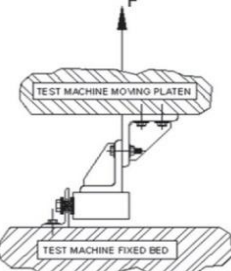
<p>Photo No.1 (ASHRAE Fig. A3.1) Vertical Tension and Compression</p>	<p>Photo No.2 (ASHRAE Fig. A3.2) 45 Longitudinal Vertical Load</p>
<p>Photo No.3 (ASHRAE Fig. A3.3) Horizontal Longitudinal</p>	<p>Photo No.4 (ASHRAE Fig. A3.4) 45 Lateral Vertical Load</p>
<p>Photo No.5 (ASHRAE Fig. A3.5) Horizontal Transverse</p>	<p>Photo No.6 (ASHRAE Fig. A3.1) Vertical Tension and Compression</p>
<p>Photo No.7 (ASHRAE Fig. A3.2) 45 Longitudinal Vertical Load</p>	<p>Photo No.8 (ASHRAE Fig. A3.3) Horizontal Longitudinal</p>

 	 
<p>Photo No.9 (ASHRAE Fig. A3.4) 45 Lateral Vertical Load</p>	<p>Photo No.10 (ASHRAE Fig. A3.5) Horizontal Transverse</p>
 	 
<p>Photo No.11 (ASHRAE Fig. A3.1) Vertical Tension and Compression</p>	<p>Photo No.12 (ASHRAE Fig. A3.2) 45 Longitudinal Vertical Load</p>
 	 
<p>Photo No.13 (ASHRAE Fig. A3.3) Horizontal Longitudinal</p>	<p>Photo No.14 (ASHRAE Fig. A3.4) 45 Lateral Vertical Load</p>
 	 
<p>Photo No.15 (ASHRAE Fig. A3.5) Horizontal Transverse</p>	<p>Photo No.16 (ASHRAE Fig. A3.1) Vertical Tension and Compression</p>

PHOTOS FROM INSPECTION

 	 
<p>Photo No.17 (ASHRAE Fig. A3.2) 45 Longitudinal Vertical Load</p>	<p>Photo No.18 (ASHRAE Fig. A3.3) Horizontal Longitudinal</p>
 	 
<p>Photo No.19 (ASHRAE Fig. A3.4) 45 Lateral Vertical Load</p>	<p>Photo No.20 (ASHRAE Fig. A3.5) Horizontal Transverse</p>
 	 
<p>Photo No.21 (ASHRAE Fig. 14C) Combined Load</p>	<p>Photo No.22 (ASHRAE Fig. 14B) Vertical Load</p>
 	 
<p>Photo No.23 (ASHRAE Fig. 14A) Horizontal Load</p>	<p>Photo No.24 (ASHRAE Fig. 14C) Combined Load</p>



	 <p>14A Horizontal Load</p>		 <p>16B Vertical Load</p>
<p>Photo No.25 (ASHRAE Fig. 14A) Horizontal Load</p>	<p>Photo No.27 (ASHRAE Fig. 16B) Vertical Load</p>		